THE

BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. LXXII. THURSDAY, JUNE 1, 1865. No. 18.

EXPERIMENTAL RESEARCHES ON OPIUM AND ITS ALKALOIDS.*

BY M. CL. BERNARD.

[Translated from the Comptes Rendus, and communicated for the Boston Medical and Surgical Journal, by EDWARD H. CLARKE, M.D., Professor of Materia Medica in Harvard College.]

IN my course of experimental medicine, at the College of France, I have examined, this year, the various physiological agents, which may be used to facilitate experiments on living animals. In this way I have been led to examine the stupefying properties of opium and its alkaloids. But, during this study, I have encountered various unexpected phenomena, which I now purpose examining more closely, on account of the therapeutical and medical importance of opium.

Opium is a mixture of a large number of substances, many of which differ essentially from each other in their action on the animal economy. Since chemistry has isolated the active alkaloids of opium, many physicians have employed them in preference to opium itself. It is for the interest of therapeutics that this tendency should be greatly encouraged, as we shall see by the following results.

Many years of experimental investigation will be required in

* NOTE BY THE TRANSLATOR.—M. Bernard gave a series of lectures, last summer, at the College of France, of unusual interest, on the physiological action of certain important drugs. He discussed particularly opium and strychnia. The conclusions at which he arrived are of the greatest practical value, especially with regard to opium and its alkaloids. Notwithstanding the familiarity of physicians with opium, and the frequency with which they employ it, our knowledge of its physiological action is imperfect. In this respect, M. Bernard's recent researches promise to be of the highest importance.

When in Paris, last summer, I found that the new alkaloid of opium, narceine, whose physiological action is described in the following article, was used by physicians there with evident advantage. Since my return, I have prescribed it in several cases, and am satisfied with its action. It produces quiet and profound sleep, with a less number of disagreeable symptoms than morphine. The dose of it is from one tenth to one fifth of a grain, repeated if necessary. The most convenient form for its administration is that of pill made up with acetic acid and some inert substance. The only objection to its use is its cost, being at the present time nearly one dollar per grain. The only druggists of whom it can be obtained, so far as I know, in the country, are Messrs. T. Metcalf & Co., of this city. Should it meet with favor from physicians, as I think it will, it will doubtless be furnished at less cost and generally kept by druggists.

order to carry the study of the physiological action of opium and its alkaloids, which I have undertaken, as far as modern experimental physiology is capable of carrying it. The work which I have the honor to present to the Academy, then, is not a finished one, but only a sort of introduction, in which I shall treat, in a general and comparative manner, of the soporific and toxicological properties of six of the most active principles of opium, viz., morphine, narceine, codeine, narcotine, papaverine and thebaine.

I.—*Soporific Properties of the Alkaloids of Opium.*—Experiments upon animals have taught me, that among the six principles of opium, mentioned above, three only possess the property of inducing sleep: these are, *morphine, narceine* and *codeine*. The three others—narcotine, papaverine and thebaine—possess no soporific action; so that from this point of view they are not only substances foreign to opium, but are agents whose peculiar action may oppose or modify the soporific effect of the three first.

Because morphine, narceine and codeine are soporific, we must not conclude that they are identical in their physiological and therapeutical properties. Experience shows, on the contrary, that each has specific virtues, for each produces sleep in a peculiar way, and induces, moreover, a characteristic sleep. I have used morphine and codeine as chloro-hydrates, in a solution of five grammes of the salt to one hundred grammes of distilled water. Narceine, being the most soluble, I have employed directly, in a solution of the same strength.

I have given these soporific substances, sometimes by the stomach and rectum, and sometimes I have injected them into the veins, or the pleura, or the trachea, or into the subcutaneous cellular tissue.

Elsewhere, I shall examine the differences which are induced by these various modes of administration; the general results, which I am now about to describe, were obtained by injections into the subcutaneous cellular tissue. This method leads to a regular absorption of the active substance, and consequently furnishes results that are definite and capable of comparison. Indeed, it seems to me that on account of these circumstances, sub-cutaneous absorption, which has not been employed up to the present time, or, if employed, used only in exceptional cases, ought to be the general method of administering all energetic drugs in a pure state.

The injection into the subcutaneous cellular tissue of a cubic centimetre of a solution of the chloro-hydrate of morphia, of the strength of five grammes to a hundred, which consequently contains five centigrammes of the salt, is sufficient to produce profound sleep in a young dog of medium size.

Dogs of adult age, or of larger size, require a stronger dose. However, as we shall see by and by, when speaking of the toxicological effects of morphine, we can double, triple, and even decuple the dose, and thus produce a sleep more and more profound, without other

inconveniences than certain phenomena that are not dangerous to the animal.

When dogs are thus profoundly stupefied by morphine, they are like living machines that are rendered inactive, and so are very convenient for physiological observations and experiments. If they are laid upon the back in a trough they remain there for hours together, profoundly asleep and without movement. They can be kept in any position, even with the mouth open, without offering any resistance, and so can be subjected, with the greatest ease, to long and delicate physiological operations.

Though the sleep produced by morphine is very profound, and sensation is considerably blunted, at the same time that the nerves of sensibility are rendered sluggish, yet the animals are not insensible. In reality, if the extremities are forcibly pinched, the animal, at first, manifests no sensation of pain, so that he appears insensible; but if the attempt is repeated two or three times, the animal experiences pain and moves. In these conditions, and especially when the sleep begins to go off, animals show themselves particularly sensitive to sudden noises. If a blow is struck upon a table, or if the noise of falling water is suddenly produced, by opening a cock near by, the dog leaps up, and awakes in jumping; often, indeed, he gets up and runs off, as if frightened, but only to stop again directly, and fall back into the state of narcotism. If these noises are often repeated, the animal finally becomes habituated to them, and is not disturbed by them—a condition contrary to that produced by pinching, as we have stated above.

The duration and intensity of the sleep produced by morphine are naturally proportionate to the dose of the substance absorbed; but it is of especial importance to examine the manner of awakening, which is characteristic. Dogs, in coming to, always present the same aspect. They are often frightened. Their eyes are haggard. Their hind quarters droop and are half paralyzed. All of which gives to them an aspect like that of an hyena. If dogs in this condition are called, they run off as if alarmed; they do not recognize their master, and seek to conceal themselves in obscure places. These intellectual disturbances of animals sometimes continue not less than twelve hours, and only after this period do they resume their normal disposition.

If, now, we compare the sleep produced by codeine with that produced by morphine, we shall see that they differ essentially from each other. Five centigrammes of the chloro-hydrate of codeine, injected under the skin, are in like manner sufficient to produce sleep in a young dog of medium size. If the dogs are adults, or of large size, it is necessary to augment the dose in order to produce the same effect. But whatever the dose may be, it is not possible to produce in dogs so profound a sleep by codeine as by morphine. The animal can always be easily aroused, either by pinching his extremities, or

by making a noise near him. If the dog is laid on his back in a trough, he remains there, tranquil, but presents the appearance of being calm rather than of being asleep. He is easily aroused. At the least noise, he jumps upon his feet, and if a blow is suddenly and violently struck near where he is lying, he leaps up and runs off. This excitability is only the exaggeration of a condition like that which we have already seen as the result of morphine; like that, it disappears by repeated disturbance.

Codeine blunts the sensation much less than morphine. It does not render the nerves sluggish, like the latter, and, consequently, for physiological operations, morphine is far preferable to codeine. But it is at the time of awakening that the difference between the effects of codeine and morphine especially manifest themselves. Animals who have taken an equal dose of codeine, awake without fright, without paralysis of the posterior extremities, and with their natural disposition; they do not exhibit the intellectual disturbance which follows the use of morphine. Among the very numerous experiments that I have made on this subject, I will confine myself to the report of a single example, which sufficiently illustrates the differences that I have pointed out.

Two young dogs, accustomed to play together, and both of them of a size rather above the average, received, in the subcutaneous cellular tissue of the axilla, by means of a small-pointed syringe, one of them five centigrammes of the chloro-hydrate of morphine, dissolved in one cubic centimetre of water, and the other five centigrammes of the chloro-hydrate of codeine similarly dissolved. At the end of about a quarter of an hour the two dogs became sleepy. Both were placed upon the back in a trough, where they slept tranquilly nearly three or four hours. Then the two animals, being aroused, presented a most striking contrast. The dog with morphine ran around with a terrified eye and the gait of an hyena, not recognizing any one, not even his comrade, who had taken codeine, and who in vain coaxed him, and leaped upon his back in order to play with him. It was not until the next day that the dog who had taken morphine resumed his cheerfulness and his ordinary disposition. Two days after, the two dogs being in good condition, I repeated the same experiment precisely, but in inverse order; that is to say, I gave codeine to the one who had taken morphine, and *vice versâ*. The dogs slept about as long as at first, but on awakening the action of the two animals was completely inverted, just as the administration of the substances had been. The dog who two days before, after taking codeine, awaked alert and gay, was now, after his sleep produced by morphine, amazed and half paralyzed, while the other awaked active and joyous.

The sleep produced by narceine partakes of the nature of that produced by morphine, and of that produced by codeine, and at the same time differs from them both. Narceine has greater power in

producing sleep than any other element of opium. In equal doses, animals are made to sleep more profoundly by narceine than by codeine, but they are not plunged into so stupefying a sleep as they are by morphine. Their nerves of sensation, although blunted, are not rendered especially sluggish. They readily give evidence of painful sensations when their extremities are irritated. The especial characteristic of the sleep produced by narceine is the profound quiet and insensibility to noise which we remarked in morphine, and found at its greatest intensity in codeine. Animals who have been put to sleep by narceine readily return, when awakened, to their natural condition. They exhibit, only in a very moderate degree, weakness of the posterior extremities or appearance of terror. In this respect the awakening from narceine resembles the awakening from codeine.

I will add that the sleep of narceine is very convenient for physiological observations. Dogs, plunged into a profound sleep for hours, make no resistance, and, if they complain, they do not endeavor to run off nor bite.

Animals are thus put into a condition from which it would seem as if they could not be aroused. At the Society of Biology, during a session in the month of July last, I injected under the skin of the axilla of a young dog seven or eight centigrammes of narceine, dissolved in two cubic centimetres of water. In about a quarter of an hour the animal was seized with a sleep so profound, that in order to convince the President as well as many members of this laborious Society, whose transactions have been so advantageous to the advancement of medical science, that the animal was not dead, I was obliged to exhibit him at the following session.

In conclusion, each of the three soporific substances contained in opium produces a sleep which is to a certain extent characteristic. I have demonstrated this result, not only upon dogs, but also upon cats, rabbits, guinea-pigs, rats, pigeons, sparrows and frogs. In all of them the effects of the three substances present the same characteristics and the same differences, after allowing for the special susceptibility of each animal. White rats—albinos—who are very easily narcotized, also manifest, decidedly, the differences that we have pointed out between the sleep of morphine, that of codeine and that of narceine. If the bars of a cage, into which three rats have been put to sleep by these three substances, are made to vibrate even slightly, the rat that has taken codeine leaps into the air, and the two others remain quiet; if the bars are made to vibrate more strongly, the rat that has taken codeine and the one that has taken morphine leap up, but the first more than the second; whilst the rat that has taken narceine does not move and remains asleep. On awakening, the rat with codeine is the first to resume his ordinary condition; then follows the one with narceine, while the one with morphine remains for a long time stupid.

The differences which I have pointed out between morphine and codeine have been for a long time known to physicians. It has been observed, in man, that morphine produces a heavy sleep, with consecutive headache; whilst codeine produces, on the contrary, a much lighter sleep, without headache on awakening. But narceine had not yet been tried on man. Since the very exact results of my experiments, two physicians of Paris, well known for their scientific labors—M. Debout, Editor of the *Bulletin Général de Thérapeutique*, and M. Béhier, physician of the Hospital of La Pitié—have made experiments with it upon man, which agree completely with the effects of narceine that I have observed in animals. I refrain from pointing out these results, because they are in process of publication. I will only remark that, to-day, we may consider narceine as having definitely entered the domain of therapeutics equally with the two other soporific principles of opium.*

I will remark that animals, as well as man, are much more sensitive to the effects of morphine, codeine and narceine when they are young than when they are adult. They exhibit, moreover, the same rapid habituation to the soporific effects of these three substances; so much so, that in order to obtain the results of which we have spoken, it is important to select fresh animals, for I have observed that the phenomena of habituation are sometimes of long duration.

II.—*Toxicological Properties of the Alkaloids of Opium.*—The six principles of opium that I have studied are all poisons, but no relation can be established between their toxicological properties and their soporific action. I have been led to make some researches upon their toxicological action, because I have observed, in stupefying animals for physiological operations, that the gummy extract of opium was relatively more dangerous than morphine. In reality, experiments soon showed that morphine was one of the least poisonous of the alkaloids of opium, and that thebaine was the most active poison

* The following cases confirm M. Bernard's statement of the soporific action of narceine. The details of them are omitted. Only enough is given to illustrate its soporific influence.

Case I.—A lady, æt. about 30, who had been subject for two or three years to frequent and violent headaches, took half a grain of narceine, in divided doses. After the last dose, she fell into a profound sleep that lasted eight or nine hours. The sleep was quiet, and she had very little disturbance of the stomach or bowels the next day. For similar attacks, she had often taken more than a grain of one of the salts of morphine before an equally profound sleep could be produced.

Case II.—A gentleman, æt. 50, suffered from an intense neuralgia of the right arm, following an attack of acute rheumatism. I treated him with the iodide of potassium, large doses of quinine, the subcutaneous injection of morphia, counter-irritation, &c., and finally advised a journey to Europe. The prominent symptom was severe pain at night, which prevented sleep. After a varied but unsuccessful treatment in Paris, narceine was prescribed for him by M. Duchenne, and the first dose of one fifth of a grain was followed by a night of quiet sleep—more quiet and longer sleep than twice the amount of morphine had ever produced. For the past few months the same patient has repeatedly taken the same dose, with the same result.

Case III.—A lady, æt. about 50, was attacked with neuralgia of the left arm, following a traumatic lesion of the nerve. She suffered most at night, and was often deprived of sleep by pain in the arm. After a variety of treatment, I prescribed narceine. She took it in doses of one tenth of a grain. It always produced sleep, though sometimes two tenths, and sometimes three tenths of a grain were requisite for that purpose.

In all of these cases there was little or no headache or nausea the next day. There was moderate constipation, and scarcely any loss of appetite.—Translator.

among them. To give an idea of the difference in this respect between these two alkaloids, I will say that one decigramme of the chloro-hydrate of thebaine, dissolved in two cubic centimetres of distilled water, and injected into the veins of a dog of the weight of seven or eight killogrammes, kills him in five minutes; whilst I have been able to inject as much as two grammes of the chloro-hydrate of morphia into the veins of an animal of the same size without producing death. Next to thebaine, in toxicological power, comes codeine, which is also much more dangerous than morphine. The opposite opinion prevails among physicians, who clinically prescribe codeine in a higher dose than morphine. This error arises from the fact that, in ordinary use, morphine produces rapidly, and long before a toxicological dose is attained, such phenomena as headache and vomiting; while codeine, which produces little sleep, does not produce these phenomena to the same extent, though it is much more poisonous. The dose of the chloro-hydrate of codeine, which, injected into the veins will kill a dog, is much smaller than the dose of the chloro-hydrate of morphine which may be injected in the same way without producing death.

But the principles of opium are not only poisonous; they are also agents that produce convulsions—that is to say, they produce death with violent tetanic spasms. These convulsions, in certain cases, and especially after taking thebaine, are followed by an arrest of the heart's action, and a rapid cadaveric rigidity, such as occurs with muscular poisons. Narceine alone is an exception to this, for it produces neither excitement nor convulsion. Animals, to whom it has been given in a poisonous dose, die in a sort of relaxation.

At the present time I confine myself to these brief statements, for I am about to examine, analytically, each one of the alkaloids of opium with the greatest care. It is only in this way that we shall be able to find an explanation of their soporific and of their diverse medicinal actions.

Opium has already been the object of a large number of isolated experiments; but, as we see, these studies are insufficient. Each of the alkaloids of opium should be re-examined methodically and analytically, with the aids that physiological experiment places at our disposal. For this purpose I shall give a history of the researches that have already been undertaken, and which I have omitted in the general survey that I have given you to-day.

III.—*Conclusions and Reflections.*—The alkaloids of opium produce three principal actions:—1st, a soporific action; 2d, an exciting or convulsive action; and, 3d, a toxicological action.

In relation to these actions, the six principles of opium that I have studied may be arranged in the following order. As soporifics, we have narceine in the first rank, morphine in the second, and codeine in the third. The three other principles have no soporific action. As convulsives we have, 1st, thebaine; 2d, papaverine; 3d,

narcotine; 4th, codeine; 5th, morphine; 6th, narceine. As toxicological agents we have 1st, thebaine; 2d, codeine; 3d, papaverine; 4th, narceine; 5th, morphine; 6th, narcotine.

In order to obtain the preceding classifications, we must experiment upon animals susceptible of a close comparison with each other; otherwise we shall not be able to seize upon the actual shades of difference. Such is the difference, and a very slight one, in toxicological action, between morphine and narceine. It would be impossible, for example, to obtain these comparative results from dogs or rabbits, because these animals vary so much in size, age, race, &c. Equal caution must be observed in drawing conclusions from experiments on animals that have previously been submitted to the influence of preparations of opium, for the system is so easily accustomed to their action that under these circumstances a second experiment never resembles precisely the first one. Hence in physiology, more than elsewhere, and especially on account of the complexity of the subject, it is easier to make bad experiments than good ones—that is, comparative experiments. The frequent contradictions that are met with among experimenters form one of the principal obstacles to the advance of experimental medicine and physiology. Frogs are susceptible of comparison with each other much better than dogs, but they are not sufficiently sensitive for these experiments. On this account we have selected young sparrows, great numbers of whom may be found at Paris in the spring. These animals, taken from the nest, and consequently of the same age and size, may be closely compared with each other, and are, moreover, very sensitive to toxicological, soporific and convulsive influences. In order to administer these active solutions, I make use of the small syringe of Pravaz, armed with a fine and sharp-pointed tube. By this means I convey the active substance, drop by drop, into the subcutaneous cellular tissue, and do it with almost mathematical precision.

As I said at the beginning, the above is merely a sketch; and although the results that I have pointed out rest on more than two hundred experiments, yet it will be apparent that the study is only at its commencement, if we reflect that before approaching the question of the intimate action of each of these substances we must determine their effects on digestion, circulation, secretion, excretion, and explain, moreover, the singular phenomena of the habituation of organs to the effects of opiate preparations.

To-day, I desire only to draw the attention of physiologists and physicians to studies, which I look upon as the basis of scientific therapeutics. These researches are so extensive, and these questions so difficult, that the efforts of all are necessary for their resolution; and all should earnestly promote the work. Therapeutics presents difficulties enough in itself without augmenting them by employing complex drugs, like opium, that often produce a variable result.

Complex actions must be analyzed, and reduced to those that are simple and precise, by employing separate principles, and then by recombining these principles if necessary. Thus, opium will never produce the effects of narceine—that is, sleep without excitement—but it may lead to a variety of results, depending on the greater or less degree of individual susceptibility to one or another of the active principles that compose it. Experiments on animals alone enable us to make those appropriate physiological analyses, which point out and explain the medicinal effects that are observed in man. We see, in reality, that whatever we notice in man we find in animals also, and *vice versâ;* only there are peculiarities, which are explained by diversity of organization. At the bottom, the nature of the physiological action is the same. It could not be otherwise, for if it were, there would be neither physiological nor medical science.

Finally, I will close with a remark that flows naturally from the above. We see, by the example of opium, that the same vegetable may contain principles whose actions on the animal economy are different from each other, and in some sort opposed to each other. Hence, we may obtain a number of distinct drugs from the same plant. With regard to opium in particular, I think that each one of its principles is destined to become a distinct drug, especially as it contains principles which exert a very marked influence on the organism, without being poisonous in proportion to the energy of this action. Thus, for example, the chloro-hydrate of narcotine exerts a decidedly convulsive action, although it is the least poisonous of the principles of opium that we have examined. It is not a necessary inference, then, that plants of the same family possess the same medicinal virtues, when we see the same vegetable furnishing active products whose physiological properties are so varied.

MOLLUSCUM CONTAGIOSUM.

REAL "Molluscum contagiosum" is such a rare disease that a few remarks on a curious case of this affection which was lately observed in Professor Ebert's clinique may be of interest. The patient was a little girl, aged 4, of scrofulous habits, who had two years ago suffered from caries of the os cuboideum; soon afterwards small tumors of a size varying from that of a pea to a walnut appeared on the eyelids, the nose, the forehead, temples, lips, chin and cheeks. They secreted a putrid and most offensive semi-fluid mass. When she was brought into the hospital she had altogether 107 such tumors, of which there were 15 on the left, and 16 on the right eyelid, entirely closing up the opening of both eyes. In the centre of these tumors there was a small dark point, which was deeper than the circumference, being evidently the opening of a follicle.

When the tumors were compressed by a pair of pincers, or by a thread laid round their base, a fatty white core was pressed out through the points mentioned. On being examined by the microscope, it appeared that they did not consist of fat or sebum, but of epidermis cells, covered by a layer of large cells devoid of nuclei, such as are found in cancroid tumors. Ligatures were passed round the base of the largest of these tumors, after which they became black, dry, and fell off. Putrid pus formed on the surface, and an application of chlorine water was then made. There was some erysipelas of the left side of the face, which, however, soon subsided. In those tumors which had not been operated upon, considerable suppuration now took place, after which they became much smaller and drier, and within a short time disappeared altogether under the influence of good food, cleanliness, baths and cod-liver oil. Two months after admission, there were only very few small white tumors in the neighborhood of the eyes left, and the great disfigurement of the face had disappeared. A month afterwards, however, fresh tumors were formed, and a violent blenorrhœa of the conjunctiva supervened. These fresh tumors were not nearly so large as the previous ones, and gradually disappeared after having reached a certain size. At present the child is almost entirely cured, there being only a few traces left of the affection.

In order to settle the question of the contagiosity of these tumors, Professor Virchow, at a time when the affection was at its acme, inoculated a dog with the contents of these tumors, which were also rubbed into the skin of the animal. These experiments, however, failed. Professor Ebert then inoculated himself with the same, first on the arm, and afterwards on the forearm, but equally without success. An idiot child was afterwards experimented upon, but in this case also there was no result. It was therefore believed that molluscum contagiosum was not a really contagious malady, when it was remarked one day that a child, whose bed was nearest to that of the patient in question, had three of the same tumors on the left eyelid, and in the course of time she got no less than nine of them. The children had been frequently playing together, and it was therefore quite probable that some of the secretion might have got into the follicles of the second child, and there gave rise to the same disease.

Professor Virchow considers the contagiosity of these tumors as established by the case related above. He says that these cases are exceedingly rare, and that the expression "molluscum contagiosum" is by many, and chiefly by English authors, indiscriminately used for all sorts of little tumors, more especially for small encysted atheromata with excessive formation of connective tissue. He has examined several of these tumors, and could at first not satisfy himself as to whether the openings, which could be distinguished at the surface, were pre-existing apertures of follicles, or if they were caused by ulceration, and pressure of the mass from below upwards.

The microscope showed that the several nodes were exceedingly similar to that form of tumor which is generally designated as epithelial cancer or cancroid. The apertures communicated with a number of long canals, which were filled with a mass consisting of an exterior layer of epidermoid cells, and an inner portion which looked like fat. In the same way we notice in cancroid tumor of the lower lip, after ulceration has commenced, deep fissures and holes which lead into canals and tunnels. But there appeared this difference between the two, that the molluscum nodes proceeded directly from the follicles, and there was only production from the surface, but the parenchyma was nowhere affected; while, on the other hand, cancroid tumor is a parenchymatous formation which can only secondarily proceed outwards, after the skin has been broken, and ulceration commenced. The mass which filled the centre of these molluscum canals, consisted chiefly of round, small, shining corpuscles, which lay closely together and looked like heaps of cells filled with fat. But when they were more carefully examined, it appeared that they did not consist of fat, but of albumen. These corpuscles are formations which also occur in cancroid tumor, and are most probably formed endogenously in cells, after which they become free. They are no doubt the vehicles of contagion; being the only thing which is foreign to the system, and being also found in cancroid tumor, which is notoriously infecting. By reason of their very small size they are peculiarly suited to penetrate into the smallest openings of the skin, and to be smeared, as it were, into the hair-follicles, where these are somewhat open. Professor Virchow has, therefore, endeavored to find out whether phenomena of motion may be observed in them. They have the habitus of cells, which in other places are found to be contractile. But he has never as yet observed anything else but imbibition of liquids, and consequent change of shape in the former, but no spontaneous motion.

It would, therefore, appear that there are three different species of "molluscum." The originally so-called tumor, which belongs to the connective-tissue class, Virchow proposes to call *Fibroma molluscum;* the one that has just been described might be called *Epithelioma molluscum.* Between these two principal forms stands that which is described by English authors as *Molluscum contagiosum,* but which is in reality a perfectly closed node, consisting of epidermis cells surrounded by loose connective tissue. The author who has most offended in this way is Mr. Toynbee, who has described "*Mollusca contagiosa*" of the external and middle ear, which are perfectly closed sacs without an opening, and cannot, on this account, be contagious, as it has been proved a long time since that there must be an open orifice, if tumors are to be transmitted.—*Berlin Correspondence of London Medical Times and Gazette.*

Reports of Medical Societies.

EXTRACTS FROM THE RECORDS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. BY FRANCIS MINOT, M.D., SECRETARY.

April 24th.—*Fœtal Bones expelled from the Rectum.*—Dr. Storer reported the following case:—

"Mrs. W., about 30 years of age, consulted me in September, 1861, respecting her condition, which caused her no little anxiety. She had felt unwell for several months—complaining of pain in the lower portion of the abdomen, which she described as having been at times very severe, and continuing, when present, from three to four hours. At one time she thought she was dying—the urine was suppressed, and the catheter was required to be passed for a fortnight.

"When I saw her, she had just returned from the country—where she had gone to recruit. A slight fulness was felt on the right side of the abdomen. Upon making a vaginal examination, I decided that she was pregnant. Twenty days after my examination, she was attacked during the night with pains similar to labor pains, which continued for twelve hours, and were very severe; they then ceased. Afterwards they occurred occasionally in less degree. During the succeeding five weeks she suffered much from dyspnœa, and became very feeble. Early in November diarrhœa supervened, which continued, exceedingly offensive, for ten days. A discharge was also thrown off from the vagina, of a dark, sanious appearance, and vomiting occurred daily. For several weeks her situation was exceedingly alarming—she had become very much emaciated, could retain but little nourishment, slept only under the influence of anodynes, suffered constantly from difficulty in micturition. During this period of prostration, upon one of the cloths placed beneath her to receive the alvine evacuations, the nurse perceived a particle, which was so peculiar that it was preserved for me to examine; it proved to be a phalangeal bone. From this time the discharges from the bowels almost daily contained some portions of bone. Sometimes days would pass without a portion, and then small particles would be thrown off. I will not weary your patience by minute details. I was several times called in great haste to remove portions which could not be evacuated; thus, my notes say:—

"May 25th.—Removed to-day cranial bones from rectum by finger and forceps.

"June 18th.—Two ribs; last night, a tibia.

"July 20th, 1862.—Bowels becoming more regular. No bones have passed during the last fortnight. No pain. Has been to the North End without trouble.

"From this period she gradually improved, and during the autumn she commenced the charge of a large boarding-house, which she has since kept."

The following enumeration of the bones which are wanting to complete the skeleton was made by Dr. Hodges:—

Cranial bones wanting.—One malar bone; one temporal bone (petrous portion); ethmoid bone.

Facial bones wanting.—Two palatal bones; two turbinated bones; two nasal bones; all the *teeth* wanting; no *os hyoides*.

Of the *spinal column* twelve vertebræ are wanting, and the entire os sacrum and coccyx. Of the remaining vertebræ four only are complete; four want the body, and four want the body and one half of the arch.

Three *ribs* of the right side and seven ribs of the left are wanting. *Sternum* wanting.

The *os pubis* of the left side is wanting.

The *right arm* wants all the bones of the hand except two phalanges. With this exception it is complete.

The *left arm* wants the *radius* and all the bones of the hand except one phalanx. Otherwise complete.

The *right leg* wants all the bones of the foot, except four metatarsal bones and one phalanx (1st) of great toe. Otherwise complete.

The *left leg* wants the *tibia* and whole of foot.

No *patellæ*.

Extra-uterine Fœtation; the Sac communicating freely with the large Intestine.—Dr. JACKSON exhibited the fœtus spoken of by Dr. Storer at the meeting of January 9th, and which Dr. S. had received from Mr. Robert L. Dryer, of Utica, N. Y., a member of the present medical class.

The patient was a woman, 40 years of age, of robust appearance, and the mother of six healthy children. For some months before death, which occurred last May, she had been failing, and on one occasion complained of pain in the bowels; but the discovery that was made on examination was entirely unexpected, and Mr. D. regrets exceedingly that no facts in relation to it have as yet been ascertained. Dr. J. M. Cleaveland, Mr. D.'s preceptor, has written to the family, who reside in a distant part of the State of New York, and to the family physician and clergyman of the parish, but he has received no answer to his letters.

On examination, which was a hurried one, a tumor was discovered upon the left side of the abdomen, but it was slight, the body being very fat. The liver was very much enlarged, and of a dull pale color. The iliac arteries were greatly distended with coagulated blood, which last had, upon the left side, a remarkably dried appearance.

The sac was in the lower umbilical and upper hypogastric regions, and was in part strongly adherent to the abdominal parietes. The fœtus lay free in its cavity, and very compactly doubled up; the soft parts being extensively changed into adipocire, and in amount not more than about enough to hold the bones together. Judging from the size of these last, and from the fact that it weighed, in the recent state, four pounds, the fœtus must have about arrived at the full term. The sac also contained a few of the long bones of the extremities, and a quantity of fæcal matter, which was mostly, though perhaps not entirely, liquid. The whole mass was then removed, and at a subsequent examination the communication of the large intestine with the sac was seen; the two orifices being three inches or more apart, and the transition between the two cavities gradual. On cutting open the intestine, one portion contained one or two small bones. The parietes of the sac are compact in structure, vary in thickness, and show no appearance of placenta. Both ovaries and Fallopian tubes are very distinctly made out, and appear normal; a portion of one of the tubes, however, being cut away towards its uterine extremity. A

thin, rough piece of bone, about half as large again as the thumb, and adherent to the inner surface of the sac, should have been mentioned.

The specimen will be preserved in the museum of the Medical College.

May 8th.—*Vomiting of a Mass of Woolen from the Stomach of a Child.*—Dr. E. Palmer showed the specimen.

The mass was very hard, almost incompressible, egg-shaped, three inches in length and an inch and a quarter in its longest transverse diameter, and was thrown up under the following circumstances.

F. L. is a boy, three years old, and has all his milk teeth, but is of hardly average vigor and health. A month ago he was seized with diarrhœa, which was soon accompanied with vomiting—neither very troublesome. All appetite departed, and loss of flesh quite rapidly occurred. In about ten days this mass of woollen was vomited, after which recovery rapidly took place.

For the six months previous to the diarrhœa, there had existed a morbid appetite for everything made of wool. The little fellow would pick up from the floor bits of yarn and swallow them; gnaw his blankets, so that it became necessary to encase them in cotton; rush at woollen garments, ladies' plush overcoats especially, like a little fury. Of course great pains were taken to overcome this propensity, and, for some little time before the occurrence of the diarrhœa, it was supposed with success. Whether the morbid appetite still exists it is difficult to determine, for the fear of vomiting up another "*mouse*" prevents indulgence. The form of the mass which these woolen fragments assumed in the stomach, and its hardness, are interesting phenomena.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, JUNE 1, 1865.

Medical Journals.—The remark quoted by a correspondent, in a recent number of this Journal, from a professional acquaintance who somewhat conceitedly pronounced medical journals to be humbugs, one week announcing one specific to discredit it the next, and that therefore he would have nothing to do with them—unjust as it is to most medical periodicals—would yet seem to express a feeling which to a considerable extent holds possession of the minds of the profession at large. At least this appears to be a fair inference from the fact that, as a general rule, in this country at least, medical journalism is about as unsatisfactory and unremunerative an occupation as a man can well engage in. Let us look at this state of things for a moment and see whether it is one which admits of a remedy, and whether it is one in which the medical profession at large is doing its whole duty.

It may be urged that the principal reason why medical journals on this continent meet with such poor support is that there are too many of them. The communications which might give a creditable character to a few, are distributed among so many that their value is lost by dilution with common-place matter which no one wishes to read. This

is only a partial truth. In the parallel instance of the daily press, we see the whole country flooded to an unprecedented extent with an infinite variety of newspapers, yet every great city furnishes several which are most liberally sustained by the public and most ably conducted. It would not be fair to say that the same amount of enterprise and ability would secure a corresponding success in medical journalism, for it is a notorious fact that several of our weekly and monthly publications which have died from inanition have been conducted with signal ability. What, then, is the cause of the failure in these instances? For our answer we must look, we think, to the medical profession itself.

The man who only wants a medical journal for a weekly supply of new remedies has but a poor conception of what such a publication should be, or of his own duties of self-culture. It might as well be admitted at once, that it is impossible to offer to the world every week whole pages of novelties of this kind. The effort to do it would be sure to end in disappointment. But this is after all but a small part of the function of medical journals. Our profession is intended to be a liberal one, including in its preparatory training a large circle of the physical and intellectual sciences. Shall this culture end with the examination which licenses a graduate to practise? Is a liberally educated physician to sink at once into a mere scribbler of prescriptions, the more numerous and various the better?

The unlimited range of discussion on topics of theory and practice, and of the causes of disease: the startling revelations of the microscope and of chemistry applied to medicine, every day throwing so much new light on the processes of health and its derangements, which have hitherto been involved in the mists of speculation merely: the exact observations and experiments in physiology which characterize the present day: the crucial examination of old opinions and prejudices: the faithful study of the laws of nature: the honest application of these laws in the simplification of the treatment of the sick: the interesting movements and discoveries in the collateral physical sciences which each day brings to light—all these and many other topics find their proper place in the pages of the medical periodical. And then it is necessary that the old truth should be constantly *re*-presented to the world. New methods of stating it, or new and attractive forms of illustrating it, set it before the mind with a freshness which is necessary to keep it alive. Every reader must appreciate this, and no man deserves a respected place in our profession who is not a reader.

Medical journals also furnish a bond of union and sympathy between the members of our profession which nothing else can supply. True it is that our brethren are too apt to hold a passive position in this relation, willing to be recipients rather than communicators of the wisdom that comes by experience, leaving to a comparative few the utterance which ought to be varied and general. In this matter there is great room for, and need of improvement. Some of our most able men are only known as such to their patients and immediate friends; they never write for a medical journal. The reticence of the "silent profession" should have no check upon the pen which might be so often profitably employed where it now lies idle.

One word about the pecuniary support of medical journals. We

are told that in Europe, especially on the Continent, every educated physician makes it a matter of conscience to subscribe for at least one of these publications. Without it he feels that he would be cut adrift from the main body of the profession, and he takes a constant interest and pride in comparing his own experience with that there recorded, and is always ready to do his part in contributing to the common stock. Would that we could say as much of the members of the medical profession on this side of the water! We do not even, if we are rightly informed, keep pace in this matter with the legal profession. The law journals, we are told, are well sustained here by members of the bar: and surely there is quite as much reason for a similar patronage by physicians of the publications of their profession.

We have thus touched briefly and most superficially on some of the topics which suggest themselves to our minds when we turn our thoughts to the labors with which as journalists we are engaged. Most thankless and unsatisfactory they too often are; let us hope that our brother physicians will give us more of that sympathy and coöperation which can do so much to lighten the task for which the pecuniary compensation is so insignificant.

Boston Society of Natural History. Walker Prizes.—One of the first fruits of the munificence of the late Dr. William J. Walker appears in the following announcement, which we publish with great satisfaction. Heretofore the students of natural science in this country have had hardly any of the inducements which such prizes offer to stimulate and reward them for their special investigations. The Walker prizes will undoubtedly be the means of bringing before the scientific world many valuable researches which otherwise would not have been likely to see the light or to be undertaken.

"The following prizes were founded by the late Dr. William J. Walker, for the best memoirs, and in the English language, on subjects proposed by a committee appointed by the Council of said Society. The first and second are to be awarded annually; the third, once in five years, beginning in 1870.

"*First*—For the best memoir presented, a prize of sixty dollars may be awarded. If, however, the memoir be one of marked merit, the amount awarded may be increased to one hundred dollars, at the discretion of the committee.

"*Second*—For the next best memoir, a prize not exceeding fifty dollars may be awarded at the discretion of the committee: but neither of the above prizes shall be awarded unless the memoirs presented shall be deemed of adequate merit.

"*Third*—Grand Honorary Prize. The Council of the Society may award the sum of five hundred dollars for such scientific investigation or discovery in natural history as they may think deserving thereof; provided such investigation or discovery shall have first been made known and published in the United States of America; and shall have been at the time of said award made known and published at least one year. If in consequence of the extraordinary merit of any such investigation or discovery, the Council of the Society should see fit, they may award therefor the sum of one thousand dollars.

"*Subject of the Annual Prize for* 1865-6. 'Adduce and discuss the

evidences of the co-existence of man and extinct animals, with the view of determining the limits of his antiquity.'

"*Subject for* 1866–7. 'The fertilization of plants by the agency of insects, in reference both to cases where this agency is absolutely necessary, and where it is only accessory;' the investigations to be in preference directed to indigenous plants.

"Memoirs offered in competition for the above prizes must be forwarded on or before April 1st, prepaid and addressed

'*Boston Society of Natural History,*
for the Committee on the Walker Prizes,
Boston, Mass.'

"Each memoir must be accompanied by a sealed envelope enclosing the author's name, and superscribed by a motto corresponding to one borne by the manuscript.

"*Boston, May,* 1865."

The Plymoth District Medical Society held its annual meeting at Kingston, on Wednesday, May 10th, and made choice of officers for the ensuing year as follows:— *President,* P. L. Nichols, M.D. *Vice President,* Winslow Warren, M.D. *Secretary and Treasurer,* H. N. Jones, M.D. *Librarian,* Francis Collamore, M.D. *Censors,* Drs. Josiah S. Hammond, Benjamin Hubbard, James F. Richards. *Counsellors,* Drs. Asa Millet, N. B. Tanner, Josiah S. Hammond, James Wilde. *Commissioner on Trials,* Dr. Timothy Gordon. *Delegates to the American Medical Association,* Drs. Asa Millet, H. N. Jones. *Essayist,* Dr. James F. Richards.

Drs. Wilde, Collamore and Jones were appointed a committee to draft resolutions on the death of Dr. John Porter, of Duxbury, and submitted the following:—

Whereas it has pleased Divine Providence to remove from among us our friend and associate, Dr. John Porter, it is

Resolved, That by the death of Dr. Porter this Society and the profession have lost one of their ablest and most efficient members—one whose skill and kindness have been tried for a long series of years, and have not been found wanting.

Resolved, That we recognize in the character of Dr. Porter that close observation, sound judgment, and untiring energy, which for so many years gave him the confidence of a large circle of friends and patients.

Resolved, That we tender to the family of the deceased our sympathy with them in the bereavement they have sustained. We trust that the memory of the many virtues of the deceased, and his peaceful departure from a life of toil and care, may soften the pain of that separation which is but the first step to an eternal union.

Resolved, That a copy of these resolutions be communicated to the family of the deceased, and that they be published in the Boston Medical and Surgical Journal. H. N. Jones, *Secretary.*

Smallpox and Vaccination. *Messrs. Editors,*—At the present time, when smallpox is prevailing to a considerable extent in some of our inland towns, perhaps the following report made by myself about a

year since to the Medical Director of the Corps to which I was at that time attached, may prove interesting to your readers.

Yours truly, ISAAC SMITH, JR., M.D.

East Stoughton, Mass., May 29th, 1865.

HEADQUARTERS, 26TH MASS. VET. VOLS.
NEW ORLEANS, LA., MARCH 10, 1864.

Herewith I have the honor to transmit a report of vaccinations performed at Franklin, La., by myself, which you solicited. The subjects were for the most part negroes, a portion citizens, and the residue soldiers.

The whole number of persons vaccinated was six hundred and fourteen (614). About one third of this number had never been vaccinated before; a second third had, according to their own statements, been previously vaccinated, and the remaining third bore upon their persons conclusive evidence, in addition to their own testimony, of two previous, good vesicles.

Of those with whom this was the first operation, nearly every case resulted in a well-developed vaccine vesicle. The same result was obtained in a large proportion of the second class.

Of the third class about thirty (30) cases presented a good vaccine vesicle. From what experience I have had in this specialty, I am led to believe that no one should rely, subsequent to puberty, upon a vaccination made before that period. Though I am well aware there are many people who live the allotted time of man, oftentimes exposed to this disease, and yet not contracting it, still this is not conclusive evidence that the vaccination alone furnished the protection, as some constitutions seem to resist the attacks of almost every disease.

I have the honor to be your ob't serv't, ISAAC SMITH, JR.,

To Medical Director, 19th A. C. *Assist. Surg. 26th Mass. Vet. Vols.*

[It is to be regretted that the statements with regard to the first two classes above referred to are given in such general terms. Their value would have been immeasurably greater if given in exact numbers.—EDS.]

PHILANTHROPY DURING THE WAR.—We learn from the *Evening Post* that a gentleman of this city, Mr. Hartley, has compiled a small book, prepared with great labor, and which is a most striking exhibition of the philanthropic exertions of the American people during the war. It is stated therein that the total contributions from the States, counties, and towns, for the aid and relief of soldiers and their families, have amounted to over one hundred and eighty-seven millions of dollars ($187,209,608 62); that the contributions for the care and comfort of soldiers, by associations and individuals, have amounted to over twenty-four millions ($24,044,865 96); that the contributions, at the same time, for sufferers abroad have been $380,140 74; and that the contributions for freed men, sufferers by the riot of July, and the white refugees, have been $639,644 13; making a grand total, exclusive of the expenditures of the government, of more than two hundred millions of dollars ($212,274,259 49).

It is no exaggeration to say that this is unparalleled in the history of nations; indeed, our limited reading of military annals does not allow us to recall any instance in which the same thing has been so

much as attempted. In England, during the Crimean war, and in Germany, during the struggle against Napoleon, both men and women did a great deal in contributing to the comfort and relief of their armies. It is, in fact, impossible that war should rage in any nation without exciting the sympathies of the people to a greater or less extent. But nowhere, we believe, have such spontaneous and systematic exertions been made, or such grand results accomplished, as in the United States.

But the real significance of these large contributions lies in the deep and almost universal devotion which they manifest on the part of the people in the cause of the war. All classes have taken part in them—the poor widow with her mite, the rich merchant with his thousands, the child of the Sunday school, the settler of the backwoods, the American roaming in distant lands.—*Christian Inquirer*, from *Washington Intelligencer*.

Death from Air in the Uterine Veins.—Dr. Olshausen relates a fatal case of entry of air into the uterine veins. A secundipara of robust frame, aged twenty-nine, was at term. The uterus was unusally distended; no albumen in urine. Labor lingering; uterine douche used. The water was of 30° Réaumur; it was forced into the vagina by a pump, gently. A third injection was made by a midwife. After eight minutes' use the patient began to complain of oppression. The tube was withdrawn. The patient rose in bed, immediately fell back senseless, and died in a minute at most, under convulsive respiratory movements and distortions of the face. Eight minutes later bleeding by the median vein was tried, but only a few drops flowed. On touching the body, distinct and widely-spread crepitation was felt.

Autopsy, eight hours after death.—A large quantity of dark fluid blood escaped from the sinuses of the dura mater. The cerebral membranes very hyperæmic; brain normal; lungs somewhat congested; heart lying transversely, apex in fourth intercostal space. Left ventricle in firm contraction; right quite soft, something like an intestine with thick walls; the coronary vessels contained a quantity of air-bubbles. Left heart had scarcely any blood; the right held little, but it was frothy. *Abdomen:* The distended uterus crepitated everywhere on pressure under the hand. A number of vessels of medium calibre immediately under the peritoneum were plainly filled with air. The right broad ligament was strongly distended with air-bubbles; and this emphysema of cellular tissue extended from the broad ligament through the retro-peritoneal space to the inner side of the right kidney, and even below the liver to the vena cava ascendens. *The vena cava ascendens was enormously distended*—it was at least an inch in diameter. The distension was mainly owing to air. The uterus was divided in the median line. A placenta was attached to the anterior wall; a small flap to the right was detached from the uterus. Another placenta was attached behind and to the right. A larger portion of this had been separated, so that there was a sort of pouch between it and the uterine wall. The two ova were uninjured. Death was caused by forcing air into the vessels of the placental-site. It was concluded that the tube had been passed into the uterine cavity, and that air had been sucked up with the water by the pump.

[This case presents another example of the danger of resorting to

the vaginal douche for the purpose of inducing labor, a danger from which the more certain and expeditious method of hydrostatic dilatation of the cervix uteri, is free.]—*Brit. and Foreign Medico-Chir. Review.*

Connecticut State Medical Society.—The annual convention of the Connecticut State Medical Society met at the hospital in Hartford, May 24th. The following officers were elected for the ensuing year:—*President*, Dr. N. B. Ives, of New Haven; *Vice President*, Dr. Isaac G. Porter, of New London; *Treasurer*, Dr. J. C. Jackson, of Hartford; *Secretary*, Dr. M. C. White, of New Haven. Twenty-four fellows from the State Society were present; also two delegates from New Hampshire, and two from New York. Dr. Hunt, from the committee of award, announced that the prize of $50 for the best essay on the means of preventing consumption, has been given to Dr. G. W. Burke, of Middletown. Dr. N. B. Ives, of New Haven, presented to the Society $50 as a prize for the best essay the coming year. At the afternoon session, Dr. Bronson, of New Haven, read an interesting biographical sketch of the late Dr. Charles Hooker, Professor of Anatomy at Yale College. In the evening, Dr. E. K. Hunt, of Hartford, retiring President of the Society, read a highly instructive address at Representatives' Hall. After the delivery of the address, the members, at the invitation of the Hartford Society, repaired to the Trumbull House, where a sumptuous collation was prepared for them.—*Hartford Courant.*

Since the United States Army General Hospital at Readville was established—July 6th, 1864—there have been admitted 3086 patients; 1330 have been returned to duty, 831 have been transferred to other general hospitals, 166 have been discharged for disability, 40 transferred to the Veteran Reserve Corps, and 74 discharged, in accordance with recent orders of the War Department, as requiring no further treatment. Twenty-eight have died at the hospital.

The total fund of the Hartford (Ct) Hospital is $56,000. The total receipts for the year ending Feb. 28th, last, were $9,193·85; disbursements, $9,136·71. Through the liberality of C. F. Pond, $2,000 were received for the purpose of establishing free beds in the hospital. During the past year there have been 163 under care, 142 discharged, 102 recovered, 2 discharged improved, 9 discharged stationary, 29 died. The town of Hartford paid for the support of patients, $505·79, at the rate of $1·00 per week. The average weekly amount received from the State for each patient was $1·48. The average cost for the support of each patient, including board, washing, nursing and medical attendance, was $6·37 per week.

VITAL STATISTICS OF BOSTON.

For the Week ending Saturday, May 27th, 1865.

DEATHS.

	Males.	*Females.*	*Total*
Deaths during the week - - - - - - -	36	28	64
Ave. mortality of corresponding weeks for ten years, 1853—1863,	39.6	33.5	73.1
Average corrected to increased population - - - - -	00	00	80.82
Death of persons above 90 - - - - - - - -	0	0	0

Deaths in Boston for the week ending Saturday noon, May 27th, 64. Males, 36—Females, 28. Abscess, 1—accident, 2—anæmia, 1—inflammation of the bowels, 2—congestion of the brain, 1—disease of the brain, 5—inflammation of the brain, 1—bronchitis, 1—cancer, 1—carbuncle, 1—consumption, 8—convulsions, 2—croup, 1—dropsy, 2—dropsy of the brain, 3—erysipelas, 1—scarlet fever, 1—typhoid fever, 5—hæmorrhage, 1—disease of the heart, 1—homicide, 1—infantile disease, 1—congestion of the lungs, 3—inflammation of the lungs, 3—rheumatism, 1—scrofula, 1—smallpox, 5—suicide, 2—unknown, 5—uræmia, 1.

Under 5 years of age, 22—between 5 and 20 years, 13—between 20 and 40 years, 17—between 40 and 60 years, 7—above 60 years, 5. Born in the United States, 43—Ireland, 16—other places, 5.